Economic Concepts for the Social Sciences

TODD SANDLER
University of Southern California

CAMBRIDGE
UNIVERSITY PRESS

PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Cambridge CB2 2RU, UK
40 West 20th Street, New York, NY 10011-4211, USA
10 Stamford Road, Oakleigh, VIC 3166, Australia
Ruiz de Alarcón 13, 28014 Madrid, Spain
Dock House, The Waterfront, Cape Town 8001, South Africa

http://www.cambridge.org

First published 2001

Printed in the United States of America

Typeface Times New Roman 10/12 pt. *System* QuarkXPress [BTS]

A catalog record for this book is available from the British Library.

Library of Congress Cataloging in Publication data
Sandler, Todd.
Economic concepts for the social sciences / Todd Sandler.
p. cm.
Includes bibliographical references and index.
ISBN 0-521-79262-2 – ISBN 0-521-79677-6 (pb.)
1. Economics – History – 20th century. 2. Social sciences – History – 20th century.
I. Title.
HB87.S234 2001
330 – dc21 2001025637

ISBN 0 521 79262 2 hardback
ISBN 0 521 79677 6 paperback

Contents

Table and Figures

TABLE

FIGURES

1 Economics without Apology

On the dubious date of 1 April 1971, after two and a half years of study, I successfully defended my dissertation in economics. Although the 2000–01 academic year marks my thirtieth year of teaching economics since the fall of 1970, I am no less enthusiastic about the subject. To impart my excitement about economics to a fresh group of students is a recurring challenge that I confront most fall semesters as I rush to my large 8 A.M. section of economic principles on the other side of campus. It must be my perverse sense of humor, or else self-punishment, that I would place before myself the supreme challenge of interesting 250–300 students in a large, overheated lecture theater with its uncomfortable seats at such an ungodly hour. As I walk down the aisle to a sea of whispers as the students give me the once-over, I ask myself if I am prepared for this. At the front of the room, I pull up my blue jeans and take a deep breath. I attach the remote microphone to my shirt, switch on the infrared receiver, remove the laser pointer from my pocket, and then my eyes scan the youthful faces before me. Every semester it is the same story: of the 300 or so pairs of eyes, no pair is looking at the same spot, and no pair is looking at me – not a one! From this nadir, I must accomplish my task – to somehow get these students to understand and appreciate the power, importance, and prevalence of economic concepts in the modern-day society that we inhabit. While I cannot claim to get through to all of them, I do manage, I believe, to convince a large percentage that economic principles have influenced our lives greatly during the last century and will have a more pronounced effect in the twenty-first century. Economics not only provides insights into social phenomena that we experience daily – for example, how prices and wages direct resources to their most valued uses – but also plays an active role in guiding policy.

In this book, I take up the same daunting task of convincing my reader that economic thinking has much to offer and remains a driving force in

society today. Its influence will grow in the new century as resource scarcity increases. Economics not only can explain how nations can collectively address the deterioration to the oceans, groundwater, rivers, forests, and atmosphere, but also can enlighten us on how best to assist developing countries.[1] A knowledge of economics can guide intergenerational choices on how decisions today affect the choices available tomorrow. Additionally, economics can help to explain the decay of urban centers, the breakdown of cartels, the need for governments, the design of contracts, the decline of trade unions, and the pitfalls of minimum wages. Economics can promote informed decisions about sustainability, globalization, and the transition to capitalism. If you choose to be ignorant about economics, then you are governed in many aspects of your daily existence by forces beyond your control that remain a mystery. With a basic understanding of economics, these forces can be harnessed to advantage.

If I were pressed to say why economics has held my attention for so many years, five things would top the list. First and foremost is its relevancy in explaining the real world. I can understand why many social interactions assume the forms that they do by applying economics and, in so doing, I am able to profit from an ability to anticipate outcomes. Second, I love the way that economics combines alternative ways of reasoning as it borrows from so many disciplines. Third, there is its beauty and elegance of expression. When economics is executed by a skilled mind, its formulation is clever and pregnant with applications. Fourth, economics is interdisciplinary in its orientation. As an offspring of moral philosophy and physics, economics requires both sides of the brain, owing to its philosophical, analytical, and visual underpinnings. Finally, and no less important than the other reasons, economics is logically rigorous. Even when it merely conceptualizes a problem, there is a rigorous framework to the argument. Given its reliance on well-reasoned and well-expressed arguments, it is no wonder that economics is an excellent pre-law degree. There is almost universal agreement among economists on the important basic postulates upon which economics rests.

Economics was perfected by Adam Smith, David Ricardo, John Stuart Mill, and Thomas Robert Malthus, from earlier writings dating back to Aristotle, in order to influence policy decisions. Smith and Ricardo were especially concerned with practices – the Corn Laws – that restricted international trade, as advocated by the mercantilists, who mistakenly believed that a nation's wealth was tied to its accumulated money and

[1] On these global problems see Helm (1991), Kaul, Grunberg, and Stern (1999), and Sandler (1997, 1998); on foreign assistance see Kanbur, Sandler, and Morrison (1999) and World Bank (1998).

gold reserves. This monetary treasury could be augmented by running trade surpluses (that is, exporting more than was imported) and placing payments for exports, not covered by imports, into the monetary reserves. The larger the trade surplus, the greater the growth of the treasury. Smith showed that the true wealth of a nation was dependent on its productive capacity and not on its monetary reserves, while Ricardo formulated trade theory and the poignant principle, no less true today, that free trade can improve everyone's well-being.[2] If a nation's trade surplus *limits* the buildup of its productive capacity, as it would if the money pool were not put to productive advantage, then mercantilist doctrine would lead to the decline of a nation. Free trade ensures that goods are available at the lowest price, with inefficient enterprises being driven out of business and replaced by more profitable ones. With these two intellectual giants and their theories, modern economics was born. Although economics has progressed greatly over the last 200 years, it remains a policy-oriented study. Young and talented economists must not lose sight of economics' concern for, or obsession with, policy.

This last century has witnessed significant refinements and advances in economic thought.[3] Much of the revolution in economic thinking during the twentieth century was in terms of the enhanced awareness of how markets are tied together. *General-equilibrium* analysis, whereby market interdependence is taken into account, has displaced the practice of examining isolated markets.[4] Policy prescriptions involving trade, foreign assistance, taxation, government spending, the environment, and labor practices now must recognize the influence that actions in one market have on other markets. Another important innovation is economics' enhanced emphasis on strategic behavior, whereby economic agents (for example, firms, individuals, governments) anticipate the responses of others to their own actions. For example, a firm that lowers its price must judge this decision in light of the expected reactions of others. A government that installs metal detectors in airports should not be surprised when terrorists respond by abducting hostages at other

[2] When extolling the virtues of free trade I emphasize that it "may" improve everyone's well-being, which is different from saying that it will make everyone better off. The gains from trade are often unevenly distributed and can impoverish some in sweatshops while adding to the wealth of the rich. Globalization and the increased trade that it brings may skew incomes, thereby accentuating inequality. It is this perceived widening income gap that has brought demonstrations against the World Trade Organization, the World Bank, the International Monetary Fund, and multinational firms (for example, Starbucks Coffee) to the streets of Seattle, Washington, D.C., Geneva, and elsewhere.

[3] For up-to-date and excellent treatments of the history of economic thought, see Blaug (1997) and Heilbroner (1986).

[4] On the importance of general-equilibrium analysis, see Starr (1997) and Arrow (1974a).

venues. Similarly, neighborhoods taking actions against the sale of crack cocaine should anticipate that dealers will relocate to the nearest neighborhood not taking action. With the importance of strategic behavior comes an increased interest in information. To anticipate other agents' actions, you must know not only what they know about themselves, but also what they know about you, and even what they know that you know about them. Information is no longer assumed to be costless and pervasive. Another crucial innovation in economic thought involves the role of institutions. Once regarded as given and outside of economics, institutions are now viewed by economists as an integral part of the analysis. The design of institutions can affect allocative efficiency, the distribution of income, growth, and stability – all four basic economic problems.

The purpose of the current chapter is to set the stage for the rest of the book. Thus, I am interested in addressing the role of economics in modern-day society. In particular, I want to identify the pressing issues of the day and how modern economics can enlighten us on these issues. This chapter also introduces some exciting and influential economic concepts that will be studied in greater detail in the later chapters. A crucial question involves which of these concepts and methods will have staying power and why.

ECONOMICS AND SOCIETY

We live in a world of contrasts. A few nations have accumulated vast wealth in the form of physical and human capital, while the majority have relatively little. In 1997, the richest fifth of all nations earned 86% of world income, leaving about 14% for the other 80% of nations.[5] Some of these poor nations possess tremendous natural resource wealth, but have little means to exploit this wealth. Many nations' environments are severely polluted, while others are still pristine. Select societies are technological marvels, while others have not progressed much beyond the Iron Age. Some countries dream of colonies in space and journeys to neighboring planets, while others do not dream at all, worrying instead about how to feed their teeming populations today and tomorrow. The most technologically sophisticated countries can easily protect their people against most disease-causing viruses, which can decimate less-developed countries; while these same advanced countries can be stopped in their tracks by insidious computer viruses, which have little impact in less-developed countries. Even among the rich countries, contrasts are dramatic – for example, the importance of

[5] United Nations Development Program (1999) and other years of the *Human Development Report*.

the military-industrial base, the percentage of gross domestic product (GDP) devoted to research and development (R & D), the size of the public sector, the rate of unemployment, and the nature of institutions. These contrasts, and many others, pose interesting questions about income distribution, resource allocation, and growth that economics can help to explain. When economics addresses such issues, it assumes a relevancy.

Economics is often unfairly characterized as the "dismal science," because some early classical economists warned of worsening conditions for humankind. For example, Malthus hypothesized that population grows at a geometric rate while the food supply grows at a much slower arithmetic rate, thus portending famine and pestilence – not a promising destiny. Fortunately, his calculations were faulty and, most important, technological advances in agriculture have continued to ward off these scenarios, except in the poorest countries. Ricardo's theory of rent predicted that landlords would assume an ever-increasing share of income as population pressures made us turn to less productive land – surely a depressing prediction to everyone but landowners! This hypothesis also was never realized because of technological advances in agriculture that have allowed an acre to feed ever-greater numbers of people. Landlords now receive a small share of national income – just one-half of one percent in the United States in 1993.

Economics not only can warn of pending crises, it also can lead to the sought-after result of lessening the effects of these crises or forestalling them completely. Modern economics not only identifies when intervention may be needed, but also indicates when policy is not required: in some instances, incentives may mean that the problem is self-correcting. Medicine identifies diseases, some of which can be cured and others not; but medicine is not labeled dismal. Economics is particularly promising when it helps guide society to better outcomes, such as full employment without inflation – an outcome thought impossible twenty years ago, but which has characterized the prosperity of the United States during the 1990s and beyond. While some of this prosperity may be serendipity, economic principles have been applied by the Federal Reserve to raise interest rates at appropriate points, so that inflation has not taken off during these halcyon times.

Sometimes, slight alterations in institutions and their implied incentives can have extremely favorable consequences with only modest costs. Economics' new focus on institutions and their incentive structures has allowed its methods to be applied to an ever-widening set of social and economic problems. Consider the behavior of political officeholders. A relatively new field of economics, known as public choice, views these politicians as acting to pursue their own well-being, sometimes to the

detriment of their constituents' welfare.[6] In order to win and maintain office, politicians cater to special interests, trade votes or logroll, ignore long-term consequences of their decisions, and assume centrist positions. Changes to campaign financing, term limits, election procedures, and information dissemination can influence these practices and, by so doing, can make politicians more responsive to the electorate.

As a discipline that studies optimizing behavior in the face of constraints (for example, getting the most satisfaction from your budget), economics lends itself to the study of a wide variety of social interactions and problems. Economic methods can be applied to questions in sociology (for example, group formation and actions), political science (for example, the behavior of parties in elections), history (for example, the profitability of slavery), and ecology (for example, biodiversity and species preservation). With their large bag of theoretical and empirical tools, economists are particularly adept at infiltrating other fields. This extension of economics to diverse areas has led some to complain about an economic imperialism. Edward Lazear (2000) defends this imperialism and attributes economics' successful invasion to its emphasis on rational behavior, equilibrium, and competition. Recent economic insights and methods should further the application of economic ideas to issues in other disciplines.

ISSUES OF THE DAY

We inhabit a "brave new world" where allocative decisions today can have consequences that transcend political and generational boundaries. For example, the lamp beside you that illuminates this book may use electricity generated by a nuclear power plant, whose by-products include plutonium that can pollute the planet for millennia to come. Genetic engineering raises a host of issues that range from ownership of genetic codes to inefficiencies stemming from the benefits and costs of unintended side effects. Even the choice by doctors of how often to prescribe antibiotics has an intergenerational consequence, as their use allows bacteria to acquire a tolerance, leading to more virulent forms that can threaten current and future generations. Increasingly, technologies place in our hands consumption goods that affect the unborn, who have no say in these far-reaching decisions. A related notion concerns the now-popular concept of economic sustainability, whereby the current generation's actions do not limit the options available to subsequent generations.[7] Are generations sufficiently motivated through altruism or

[6] The classic works in public choice include Black (1958), Buchanan and Tullock (1962), and Downs (1957). The field is surveyed by Mueller (1989).

[7] On sustainability, see the World Commission on Environment and Development (1987), Solow (1986), Howarth (1995), Pearce and Atkinson (1995), and Doeleman and Sandler (1998).

other interests to achieve sustainable development? The answer to this question is not very promising.

From an economic viewpoint, political borders are losing their importance. This is also true from a security perspective. Technologies have created goods and bads, whose benefits and/or costs slip through political borders. Thus, coal-fired power plants produce sulfur and nitrogen oxide emissions that travel to downwind countries and fall as acid rain or dry deposits. Coolants in refrigerators and air conditioners can release chlorofluorocarbons (CFCs) that migrate to the upper stratosphere and thin the ozone layer, which protects humans and animals from harmful ultraviolet radiation.[8] The burning of fossil fuels releases carbon dioxide (CO_2), which accumulates in the atmosphere and results in a greenhouse effect, as trapped solar energy heats up the Earth. The inhospitality of Venus is due, in large part, to elevated temperatures caused by a runaway greenhouse effect. Myriad transboundary pollutants at the regional and global levels are of current concern. In the case of health, disease-causing bacteria and viruses cross borders at will, aided by modern transport. The security of national frontiers is called into question, not only because of diseases and pollutants that travel without passports, but also because of terrorism, civil unrest, criminal activities, and revolutions that traverse borders with disastrous consequences. This increased prevalence of transnational interdependencies is traceable to more than just new technologies; it is also due to expanding populations, the breakup of nations, and accumulated stresses to our planet. We are more aware of these interdependencies because we are better able to spot them using newly developed means to monitor the environment and society.

An important question of the day concerns changing from one economic system to another. In particular, the breakdown of communist regimes from 1989 to 1991 has led to "transition economies," which are in the process of introducing a greater reliance on markets. Such transition can be accomplished all at once – the so-called "big bang" – by relinquishing government controls and fiats to all transactions. Opening up the country to international trade permits world prices to discipline domestic exchange, but often at the price of great hardship to domestic industries. This wholesale institution of markets requires an infrastructure – property law, enforcement of contracts, and a banking system – that must be set up quickly at tremendous expense. An alternative pathway of transition involves more gradual changes – myriad options exist. The nature of the best transition pathway is subject to much current debate.

Another important issue involves the architecture of institutions. Consider the firm, one of the essential agents in any economic system.

[8] See de Gruijl (1995) and Environmental Protection Agency (1987a, 1987b).

Standard economic analysis – the "neoclassical" theory – does not present an explicit theory of the firm's structure and merely assumes that firms of an unspecified nature control many economic decisions. Thus, we have little guidance in choosing between, say, the Western corporate form or the less hierarchical form of the Japanese firm.[9] What should replace the Chinese large-scale state-owned enterprises, if anything, is of considerable interest. Institutional design permeates almost every current economic problem – for example, the form of environmental treaties to address transfrontier pollution problems, the design of non-market structures to address market failures, and the proper structure of government decision making to limit participants' pursuit of their self-interest.

Another area of interest concerns whether or not people really act according to the rational-choice models that dominate the landscape of economic thought. Modern-day tools and analyses – for example, game theory, rational expectations, portfolio theory, and public choice – assume a great deal of rationality by participants. Recent analyses may allow for ill-informed agents or even mistaken behavior, but these agents are still driven to seek their own self-interest and to respond in predictable and appropriate ways to changes in constraints. Recent Nobel Prizes awarded to some of the strongest proponents of rational-choice models (for instance, Amartya Sen, Robert Lucas, Ronald Coase, James Mirrlees, Gary Becker, William Vickrey, and John Harsanyi) reflect the profession's continued faith in (obsession with) the usefulness of this paradigm. Of course, the opposite case of completely irrational (mad) behavior with no predictable pattern would leave virtually nothing for economists to study. Some unpredictability or bounded rationality can be accommodated, as some recent advances in game theory demonstrate, but predictable aspects must also remain – that is, madness or restricted capabilities must have enough predictability to allow modeling to be applied, if economics is to cast some light on these kinds of behavior.

EXCITING ECONOMIC CONCEPTS FROM THE TWENTIETH CENTURY

The obvious first place to turn to predict what economic concepts will rule thought in the twenty-first century is to identify influential and exciting concepts from the last century, especially during its last quarter. As mentioned earlier, the dominant paradigm of economics during the

[9] The background for this statement comes from Aoki (1984, p. v). The form of the firm was first systematically analyzed by Williamson (1975). Also see Cauley and Sandler (1992).

previous century was that of general equilibrium, accounting for the interrelationship of markets. By far, the most Nobel Prizes in economics were awarded for studies of the interrelationship of markets; Nobel recognition was given to contributions that analyzed its foundation (John Hicks and Paul Samuelson), its existence (Kenneth Arrow and Gerard Debreu), its linear representation (Wassily Leontief and Leonid Kantorovich), its application to specific economies (Lawrence Klein), its growth (Simon Kuznets and Robert Solow), and its trade representation (Bertil Ohlin). A recent and noteworthy extension to general-equilibrium analysis concerns systems that include economic and noneconomic phenomena. For example, bioeconomic models involve biological interactions within economic systems and have been applied to study the management of renewable resources (for example, fisheries and forests – see Chapter 11).[10] Similarly, the study of environmental economics has begun to include hydraulics, atmospheric relationships, and stochastic factors.

Much interest has been shown in the role of information in economic systems. Classical economics gave little thought to information, since everyone was assumed to be perfectly well-informed. Information was also assumed to be costless. In recent years, information has come to be considered a factor to be reckoned with, and one that may be costly to acquire. Knowledge, and who possesses it and when, is an important determinant of economic outcomes (see Chapter 7). Consider investors in a stock market who foresee or have reliable information about the future prospects of a corporation. Once this knowledge is acquired, investors will act on it and, in so doing, cause stock prices quickly to reflect these prospects. When some months later the prospect is realized, the stock price hardly budges, having already incorporated the anticipated event's influence on the value of the company. A particularly fascinating analysis involving information occurs when one party to a transaction knows more than the other. This situation of "asymmetric information" is pervasive in social and economic contexts. For instance, a terrorist group knows its own true strength, while the targeted government must decide how to respond to a bombing campaign based on signals picked up from the group's actions and the manner in which the government processes these signals. Surely, a government would capitulate to the terrorists' demands if it knew immediately that the terrorists' resources were sufficient to make the political and associated costs of giving in less than those of holding firm.

The terrorist example reminds us that game theory – the study of strategic interactions – has come to dominate economics over the last

[10] The seminal work on bioeconomics is by Clark (1985).

two decades (see Chapter 3). In economics, the application of game theory is so ubiquitous that even policy decisions are often represented as strategic interactions among policy makers and other economic agents. Sometimes, these policy interactions involve addressing market failures (see Chapters 2 and 4), and, at other times, they include agents bent on influencing decisions for their own gain (see Chapter 5). Thanks to economics, governments are no longer viewed as benevolent institutions whose actions always further societal welfare. Moreover, government interventions do not necessarily remedy market shortcomings; in fact, government failures may stem from the very same factors that lead to market failures.

In a perfect economic environment in which every activity has a price, property rights are assigned, and competition is rigorous, independent agents' pursuit of their own self-interest leads to the betterment of everyone. This result was dubbed "the invisible hand" by Adam Smith. Markets fail when this pursuit results in an inefficient allocation in which resources do not gravitate to their most valued use, so that a reassignment can improve society's well-being. Market failures are associated with externalities, public goods, open-access resources, and increasing returns to scale. An *externality* is an interdependency among two or more agents that is not taken into account by a market transaction. If running your car pollutes the environment, and if, moreover, you are not charged for the resulting damage, then an externality exists. In the absence of this charge, car owners can be expected to drive too much from a social viewpoint.

Market failures may also be associated with public goods. Publicness here does not necessarily refer to government provision; rather, it means that the good's benefits possess two properties that distinguish these goods from those that can be traded in markets. First, a pure public good's benefits are nonexcludable, with both payers and nonpayers gaining from the good once it is provided. Since the provider cannot keep others from consuming the good's benefits, consumers have a natural incentive to take advantage of the public good without paying for it, which leads to a *free-rider* problem and an anticipated underprovision of the public good. If I put on a fireworks display at the city park and then request a donation from anyone who comes to watch, my collection would surely be meager no matter how spectacular the pyrotechnics. Second, the benefits of a public good are nonrival in the sense that one user's consumption of these benefits does not detract, in the least, from the consumption opportunities still in store for others. Consider the cleanup of a polluted lake and those who visit its shores or use its waters. Once the lake is cleansed, the benefits from the cleaner

environment for one visitor do not diminish those available for another visitor.

Market failures may also arise from property rights (or ownership claims) that are either undefined or owned in common with unrestricted access. There is little incentive to acquire a good if your ownership rights are not recognized or protected. Suppose that there were no property rights to houses, so that all were considered open to the public. Clearly, there would be no reason to purchase one only to share it with any uninvited guest. For open-access resources – fisheries, hunting grounds, orbital slots – where users cannot be restricted, exploitation becomes wasteful as users ignore the effects of their actions on others. If more fishing vessels ply a fishing ground, then greater effort must be expended by each crew to land the same catch, so that actions by one vessel adversely affect the catch of others. As individuals see the resources grabbed by others, they accelerate their own grabbing until, in some instances, nothing remains.[11]

Yet another cause of market failures is attributable to *increasing returns to scale*, whereby a doubling of all inputs results in more than a doubling of output. With increasing returns, the cost per unit of production falls with an increased scale of output. There is thus a motive for ever-larger output levels within a single firm. In fact, the presence of increasing returns can lead to a *natural monopoly*, in which a single firm provides the output at a lower unit cost than multiple competitors. To ensure that such a monopoly does not restrict output and exploit its market power through high prices, governments have imposed regulatory regimes.

Market failures are discussed in greater detail in Chapters 2, 4, 5, 7, 10, and 11. Research on such failures has been a high spot in economics in the last quarter century. To appreciate markets and when they work, one must understand market failures. When markets fail, a natural question to ask is what can be done about it. The public sector with its provision of some goods and services is one alternative, but market failures are many and varied, as are their suggested remedies. Devising these remedies, while accounting for the environment of policy makers (see Chapters 4, 5, and 12), has increasingly occupied the attention of economists. What is new is the representation of this environment in terms of the policy makers' motivation, information, and strategic interactions. This new perspective is nothing short of a revolution in the study of public finance, or the way in which governments allocate resources,

[11] On externalities and public goods, consult Cornes and Sandler (1996); on open-access resources, see Ostrom (1990).

redistribute income, and stimulate growth. With the realization that regulators may not be benign welfare maximizers with the requisite information, there is now less enthusiasm for government controls, even in the case of monopolies.

Another revolution may be called *endogenizing*, whereby a variable, previously taken as given, is now determined *within the model*. For example, efforts to explain the form of economic institutions, such as the firm, represent this endogenizing revolution (see Chapter 6). Another instance involves endogenous growth and the attempt to identify which economic variables, determined by the model, can themselves stimulate growth (see Chapter 14).[12] Thus, externalities associated with technological advances can promote growth. For example, the creation of the laser and the computer had an impact on myriad industries and stimulated long-run growth. This was also true of the steam engine. Additionally, the education of women can foster growth by giving women more say over childbearing decisions. By putting off childbearing until later years, women benefit from their human-capital investment, while helping to limit population expansion and the demands for resources that this expansion entails. The end result can be faster growth and a higher standard of living.

Another noteworthy break with economic tradition involves the available procedures by which theories are tested or subject to scrutiny against the facts. I am not referring here to the tremendous refinements in econometrics (that is, the statistical representations of economics); rather, I have in mind the use of new testing procedures. Foremost among them is experimental economics, where economic theories are tested in a controlled laboratory environment (see Chapter 9).[13] Experimental economics has many advantages, since it can, for example, permit researchers to generate data rapidly without having to wait years for market-generated data. In an experimental framework, the desirability of alternative institutional arrangements, some of which may have no real-world counterpart, can be analyzed. Another novel testing procedure is the contingent valuation or survey approach, which constructs hypothetical markets in the minds of the respondents.[14] The procedure is particularly useful in situations where market data are not available. If, for instance, a society wanted to determine the impact that a planned power plant would have on hikers in a remote wilderness, the only way

[12] For a careful and up-to-date treatment of endogenous growth, see Aghion and Howitt (1998).

[13] See, for example, Kagel and Roth (1995) on experimental economics.

[14] A good source on contingent valuation methods is Cummings, Brookshire, and Schulze (1986).

to ascertain such information would be to design a survey that would enable the hikers to indicate their willingness to pay to avoid losses in visibility, as presented by simulated pictures of such a planned plant's emissions. There is obviously no other way to value such a hypothetical contingency – data just do not exist.

A final revolution in economic reasoning that is worth singling out is the incorporation of time and space into economics.[15] Many economic decisions have a time dimension, which can show up in terms of which agent goes first (leads) and which goes second (follows) in an economic interaction. The sequence of moves can have a profound influence on an outcome, as any child who has played tic-tac-toe knows. With the recognition that time matters should come the realization that the intertemporal consequences of transactions matter. Unquestionably, any explanation of economic growth or economic sustainability must account for the sequence of decisions (see Chapters 10 and 14). But with the insight that time matters should come the recognition that space also matters. Surely, the manner in which an idea spreads temporally *and* spatially is important. In the last century, spatial considerations have begun to be included in economic analysis.

WHICH IDEAS HAVE STAYING POWER?

This book is intended, in part, to answer this question. Any answer offered can be no more than an educated guess, backed by research, careful thinking, and intuition. I, however, make no claim for the universality of my views. I have no doubt that many economists, who work in areas that I do not single out as having staying power, will find displeasure with my choices and dismiss them summarily. No matter what my thoughts on staying power may be, I will alienate more economists than I win over; nevertheless, I offer these views here and throughout the book without apology.

Simple concepts and theories tend to stay around and influence thinking. For many years, the ruling paradigm in growth theory was that of Harrod-Domar, which relates growth to two easy-to-measure variables – the savings rate and the capital-output ratio.[16] The former is the proportion of annual income saved, while the latter is the number of units of capital, on average, required to produce a unit of output. Even though sophisticated refinements came along, one could get a good fix on a country's growth potential by ascertaining the ratio of these two values. Mancur Olson's (1965) seminal work, *The Logic of Collective Action*, which seeks to explain how groups form and achieve common

[15] See Faden's (1977) interesting work on the economics of space and time.
[16] On Harrod-Domar growth models, see Aghion and Howitt (1998) and Wan (1971).

objectives, is also based on a simple model with some easy-to-remember maxims – for example, larger groups are more difficult to form and, when formed, achieve less efficient results when compared to smaller groups.

Yet another example of a simple theory with staying power is contained in George Akerlof's (1970) brilliant paper on "the market for lemons" (see Chapter 7). The paper shows how asymmetric information, where sellers of used cars are well informed about the cars' quality while potential buyers are not, drives down the price of all used cars. Insofar as people with lemons – cars with chronic problems – are apt to trade them in, there are a disproportionately large number of lemons in the used-car market. Buyers, who cannot distinguish a car's quality, discount their offers as though all cars were lemons. The prophecy is self-fulfilling, as the resulting low price does not warrant trading in a good car, so that these cars are held onto or else sold to friends or family. This "adverse-selection" problem, where the bad risks drive the good out of the market, applies to many other economic scenarios, such as insurance markets.

To have lasting interest, economic theories or concepts must be applicable to a wide range of relevant situations. Again consider Olson's theory of collective action. The need for collective action, where two or more agents must join forces for a mutual gain, characterizes important concerns in virtually every field of economics: unions in labor economics, cartels in industrial organizations, alliances in defense economics, public good provision in public economics, interest groups in public choice, and pollution control in environmental economics. Many of the pressing issues of today – global warming, transnational terrorism, and control of ethnic conflict – are collective action problems. *Broad-based relevancy* is crucial for lasting power. If an economic theory affects disciplines beyond economics, as Olson's concept of collective action influenced sociology, political science, and anthropology, then its staying power is further enhanced.

Another ingredient for staying power is *testability* – that is, whether the theory can be tested, either against real-world data or in an experimental environment. Theories and hypotheses that can be tested can be judged periodically for relevancy and their ability to explain social and economic phenomena. When a theory is either too abstract to test or without real-world counterparts, it may not spread much beyond the initial formulators and their devoted disciples. Opportunities for outside funding are limited if the researcher cannot demonstrate that the concept being developed explains economic phenomena. While new theories can survive for a time and be developed for the sheer fun of it, lasting theories must eventually be judged against the standard of

explaining behavior. Theory-for-theory's-sake can carry a new economic paradigm only so far.

A final requirement for endurance is that the concept be truly *novel*. To be novel, an economic theory must be more than a formalization of standard insights. In fact, too much formalization can severely limit the audience and may become an obstacle in applying the theory. Novel findings have an element of surprise to them. While all good new theories are "obvious once understood," a point sadly misunderstood by some unimaginative journal referees, the theory's message must *at first* appear almost counterintuitive to be truly a step forward.

Of the concepts analyzed in this book, collective action possesses staying power because it fulfills all of the criteria put forward. Other theories and paradigms with staying power to direct economics in the new century include, among others, the new institutional economics, intergenerational economics, experimental economics, and spatial economics. These choices are justified in later chapters.

INTENDED AUDIENCE AND PURPOSE OF THE BOOK

This book is intended for a wide audience with no formal training in economics. I hope that it will also interest economists, especially those who like to stop and think about what we are really doing in economics and what we are likely to do in the future. A self-evaluation is therapeutic from time to time. To illustrate economic concepts, I rely on a large number of examples, which highlight the subject's applicability to a wide range of social situations. As the book's title indicates, concepts that are useful to many social sciences are emphasized in hopes of making the book of interest to readers in related disciplines. Although this book touches on a broad set of economic concepts, some restraint had to be exercised in its coverage. Preference is given to concepts that either have been recognized by the Nobel Prize committee or have been allocated a disproportionate amount of journal space. These are the concepts that have driven economic thinking. Concepts likely to receive Nobel recognition are also highlighted. In some cases, this focus is understandably influenced by my own expertise in public economics, even though I have tried not to let this be a guiding factor.

The primary purpose of this book is to present some of the key economic concepts that have influenced economic thinking in the last century and to identify which of these concepts will continue to direct economic thought in the new century. In some instances, concepts that are either not currently in vogue or just coming on the scene are offered as likely candidates to steer economic thought. In making these predictions, a secondary purpose is served by taking stock of and evaluating

the contributions of economics in the twentieth century. How has economics contributed to society during the last century? How is it likely to contribute during the twenty-first century? Which economic ideas will maintain their hold and which will be replaced by new ones? These and similar questions are addressed. Another purpose is to impart in some small way the excitement that I find in economics. This is accomplished by showing its far-reaching application beyond economics and the beauty of its logical consistency. Economic thinking will be an important tool for surviving in the twenty-first century. It is my intention to choose a sufficient number of interesting and, at times, unusual examples to make the book both enjoyable and informative.